

Pneumococcal

We have two items of interest that concern pneumococcal vaccines. The first is recommendations concerning catch up vaccination of children whose pneumococcal conjugate vaccine doses were deferred during the PCV shortage. The second is information about pneumococcal vaccination of persons with a cochlear implant.

As you are aware, the demand for pneumococcal conjugate vaccine exceeded the supply for almost two years, until early 2003. The vaccine supply has now been replenished, and most clinicians have received, or will soon receive, all the PCV they need for their practice.

During the shortage it was necessary for you to ration your available vaccine. The healthy children in your practice probably received only one or two doses. We hope that you maintained a listing of children for whom PCV was deferred. These children should now be recalled, if you have not done so already, and vaccinated as age-appropriate.

Your highest priority for catch up vaccination should be infants who received one or two doses. A second priority group is infants who received 3 doses and are eligible for a fourth dose.

As children get older, the number of doses needed to complete the series goes down. So as you recall children, remember that most will not need a total of four doses. It's likely that most children will now need only a single dose to complete their PCV series.

On May 16, 2003, CDC published a summary of the pneumococcal conjugate vaccine shortage in Morbidity and Mortality Weekly Report. In the article, CDC announced that the vaccination shortage was resolved, and that providers could return to the routine vaccination schedule. The MMWR article included a table to assist clinicians in determining the number of doses needed to catch up children who had missed doses during the shortage. The table is an expansion of the lapsed schedule table that was published in the 2000 PCV ACIP statement. The number of doses a child needs depends on their current age, and the number and timing of prior doses.

For example, a child who is now 15 months old who received a single dose of PCV prior to the first birthday needs 2 additional doses separated by at least 2 months. A 15 month old who received 2 doses prior to the first birthday needs only one additional dose. The table provides guidance for all age groups through 59 months, and for children with high risk medical conditions.

We will provide a link to the May 16 MMWR article, and the catch up table, on our broadcast resources web page

Our second pneumococcal vaccine issue concerns people with a cochlear implant. Available evidence now indicates that people with these implants are at increased risk of pneumococcal meningitis, and need age appropriate pneumococcal vaccination.

Nearly 10 thousand children and 13 thousand adults in the United States with severe to profound hearing loss have a cochlear implant. The implant is an electronic device containing electrodes that are surgically inserted into the cochlea to activate nerve fibers and allow sound signals to be transmitted to the brain. The device can help children with hearing loss perceive sounds and learn to speak.

The Food and Drug Administration first became aware of the possible association between cochlear implants and meningitis in June 2002. As of May 2003, FDA has learned of 118 cases of cochlear implant recipients worldwide who developed bacterial meningitis- 55 cases in the United States and 63 cases in other countries. The patients ranged in age from 13 months to 81 years. The majority of U.S. patients were less than five years of age.

Many of the 118 patients had certain pre-existing risk factors for meningitis, apart from the risks of the implant or the implantation procedure. These included a history of pre-implant meningitis, congenital inner ear deformity, and basilar skull fracture. In U.S. patients, the onset of meningitis symptoms ranged from less than 24 hours to greater than six years post-implant. Thirty two U.S. patients developed meningitis within one year post implantation, many in the first few weeks after surgery.

The CDC and FDA began investigating a possible link between the implants and meningitis in the summer of 2002. The investigation also involved the health departments of 36 states, and Washington, D.C., Chicago and New York City. The study group involved 4,264 children who received a cochlear implant in the United States between January 1, 1997 and August 6, 2002, and who were 6 years of age or younger at the time of the implant.

A total of 29 cases of bacterial meningitis were identified among 26 children. Three children had two episodes of the illness. Fifteen children had meningitis caused by *Streptococcus pneumoniae*. Only two cases were due to *Haemophilus influenzae* type b, and NONE were caused by *Neisseria meningitidis*. Nine of the 29 cases occurred within a month following the cochlear implant surgery. The remaining 20 occurred up to 36 months later.

The study found that the incidence of pneumococcal meningitis among children with a cochlear implant was more than 30 times the incidence among children of the same age in the U.S. population. The findings of this study were published in the July 31, 2003 issue of the New England Journal of Medicine.

Based on the findings of the investigation, ACIP has issued recommendations for vaccination of persons with a cochlear implant. The most current recommendations were published in MMWR on August 8, 2003.

ACIP recommends that persons who have a cochlear implant, or are scheduled to receive a cochlear implant, should be age-appropriately vaccinated with pneumococcal vaccine, either pneumococcal conjugate, or pneumococcal polysaccharide, or both. Pneumococcal conjugate and pneumococcal polysaccharide vaccines should be separated by 2 or more months, and should not be administered on the same day. Children 6 weeks through 5 years of age should receive Haemophilus influenzae type b vaccine as usual. Hib vaccine is not recommended for persons older than 5 years. Meningococcal vaccine is NOT recommended routinely for persons with a cochlear implant unless they have some other condition that makes them eligible for this vaccine, such as asplenia.

Children aged less than 24 months should receive from 2 to 4 doses of pneumococcal conjugate vaccine, depending on the child's age at the time of the first dose. Children with a lapse in vaccination should be vaccinated according to the catch up schedule published in MMWR in May 2003, after the PCV shortage resolved.

Children aged 24 to 59 months with a cochlear implant who have not received PCV should receive 2 doses of PCV separated by 2 months. These children should also receive one dose of pneumococcal polysaccharide vaccine, at least 2 months after the last dose of pneumococcal conjugate vaccine.

Persons aged 5 to 64 years with a cochlear implant should receive a single dose of pneumococcal polysaccharide vaccine. These persons should receive a second dose of pneumococcal polysaccharide vaccine at age 65 years, if at least 5 years have elapsed since their last dose.

A table outlining the pneumococcal vaccination recommendations is included in the August 8, 2003 MMWR article.

Persons scheduled to receive a cochlear implant should be up to date on age appropriate pneumococcal vaccination at least 2 weeks before surgery, if possible. Healthcare providers should review the vaccination records of their patients who are cochlear implant recipients or candidates to ensure that they have received appropriate pneumococcal vaccination.

In addition, all cases of meningitis should be reported to state health departments according to state requirements. Information about *Streptococcus pneumoniae* serotypes causing pneumococcal meningitis in persons with a cochlear implant is limited. So providers are encouraged to send isolates to their state health department. States will forward isolates to CDC, where serotyping can be performed.

We will provide links to the cochlear implant vaccination recommendations, and information about the meningitis study, on our broadcast resources web page.